

Title (en)

METHOD AND ULTRASONIC METER SYSTEM FOR DETERMINING PIPE ROUGHNESS

Title (de)

VERFAHREN UND ULTRASCHALLMESSSYSTEM ZUR BESTIMMUNG DER ROHRRAUHEIT

Title (fr)

PROCEDE ET SYSTEME DE COMPTEUR A ULTRASONS PERMETTANT DE DETERMINER LA RUGOSITE D'UN TUYAU

Publication

**EP 1886131 A4 20101110 (EN)**

Application

**EP 06759872 A 20060516**

Priority

- US 2006018780 W 20060516
- US 68624905 P 20050601
- US 38216006 A 20060508

Abstract (en)

[origin: US2006272417A1] A method and ultrasonic meter system for determining pipe roughness. At least some of the illustrative embodiments are ultrasonic meters comprising a spool piece that couples within a flow of fluids, and a first transducer pair mechanically mounted to the spool piece and acoustically coupled to the flow of fluids (wherein the first transducer pair comprises an upstream transducer and a downstream transducer in operational relationship to the upstream transducer and defines a first chord there between). The ultrasonic meter is configured to determine diagnostic data based on acoustic signals transmitted between the first transducer pair (wherein the diagnostic data comprises an asymmetry of the flow of fluids in the spool piece, a cross flow of the flow of fluids in the spool piece, and a profile factor of the flow of fluids in the spool piece). The ultrasonic meter is configured to determine changes in the roughness of a pipe mechanically coupled to the ultrasonic meter based on a trend of the diagnostic data (wherein the trend comprises a substantially constant value of about unity for both the asymmetry and the cross flow and a substantially changing value for the profile factor).

IPC 8 full level

**G01F 1/66** (2006.01); **G01N 29/02** (2006.01); **G01N 29/024** (2006.01); **G01N 29/22** (2006.01); **G01N 29/44** (2006.01)

CPC (source: EP US)

**G01F 1/66** (2013.01 - EP US); **G01F 1/667** (2013.01 - EP US); **G01F 25/10** (2022.01 - EP US); **G01N 29/024** (2013.01 - EP US); **G01N 29/222** (2013.01 - EP US); **G01N 29/4463** (2013.01 - EP US); **G01N 2291/0215** (2013.01 - EP US); **G01N 2291/02836** (2013.01 - EP US); **G01N 2291/2634** (2013.01 - EP US)

Citation (search report)

- [X] ZANKER K J: "Diagnostic ability of the Daniel Four-Path UL Ultrasonic Flow Meter", INTERNET CITATION, 26 March 2003 (2003-03-26), XP003015197, Retrieved from the Internet <URL:http://www.daniel.com/Products/Gas/ulsonic/Seniorsonic/AppNotes/SEA%202003,%20Diagnostics%20of%20the%20Daniel%20USM,%20KZanker%20163KB.pdf> [retrieved on 20101005] & NEL: "2nd International South East Asia Hydrocarbon Flow Measurement Workshop flyer", 2003, Retrieved from the Internet <URL:http://www.tuvnel.com/flyers/2nd\_SE\_Asia\_Workshop.pdf> [retrieved on 20101005]
- See references of WO 2006130337A2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

**US 2006272417 A1 20061207**; **US 7373808 B2 20080520**; BR PI0610904 A2 20081216; BR PI0610904 B1 20180130; BR PI0610904 B8 20220802; BR PI0610904 B8 20220816; BR PI0610904 B8 20220830; CA 2605943 A1 20061207; CA 2605943 C 20101116; CN 101189508 A 20080528; CN 101189508 B 20130130; EP 1886131 A2 20080213; EP 1886131 A4 20101110; EP 1886131 B1 20131204; HK 1108733 A1 20080516; MX 2007013611 A 20081106; RU 2007147721 A 20090720; RU 2446393 C2 20120327; WO 2006130337 A2 20061207; WO 2006130337 A3 20070705

DOCDB simple family (application)

**US 38216006 A 20060508**; BR PI0610904 A 20060516; CA 2605943 A 20060516; CN 200680019574 A 20060516; EP 06759872 A 20060516; HK 08102101 A 20080226; MX 2007013611 A 20060516; RU 2007147721 A 20060516; US 2006018780 W 20060516